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TYPE STUDIES IN THE HYDNACEAE—IV.¹ THE GENUS PHELLODON

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PHELLODON NIGER (Fries) P. Karst. Rev. Myc. 3¹: 19. 1881
Hydnum nigrum Fries, Obs. Myc. 1: 134. 1815.

No specimen was found at Upsala that could be regarded with certainty as the type of the species. Specimens under this name in the herbarium presented considerable diversity of characters. A specimen from Karsten collected in 1866 may be considered from its date as having its determination at least approved by Fries. This specimen appears identical in every respect with the American forms which we have referred to the Friesian species² and we, therefore, believe that we have rightly interpreted the species.

Phellodon amicus (Quél.)

Hydnum amicum Quél. Grev. 8: 115. 1880.
Hydnum vellereum Peck, Rept. N. Y. State Mus. Nat. Hist. 50:
110. 1897.

The type specimen of *H. amicum* Quél. could not be located, but at Paris authentic specimens from Quélet were found which appeared to be identical in all characters with the American *H. vellereum* Pk.

Phellodon pullus (Schaeff.)

Hydnum pullum Schaeff. Fung. Bavar. 4: 98. pl. 272. 1774.
Hydnum zonatum Gmelin, L. Syst. Nat. 2: 1438. 1796.
Hydnum melaleucum Fries, Obs. Myc. 1: 141. 1815.
Hydnum leptopus Pers. Myc. Eur. 2: 170. 1825.
Hydnum graveolens Delast. Fries, Epicrisis 509. 1836-38.

There is, of course, no type specimen of *Hydnum pullum* Schaeff., and our understanding of the species is based chiefly on

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² Mem. Torrey Club 12: 166.

Schaeffer's description and figures. These conform in all respects to the American plants which we have placed in this segregation. In Persoon's herbarium at Leyden are a number of specimens labelled in Persoon's handwriting "*Hydnum pullum* Schaeff." These are typical specimens of our form.

In Fries's herbarium there is no true type specimen of *H. melaleucum* Fr., but the specimens there placed under this name include plants collected as early as 1866 in Upsala by Th. Fries and in Mustiala by P. A. Karsten. These are seemingly identical with our plants. Fries also regarded *H. pullum* Schaeff. as a synonym of his species.³ The lack of odor noted by Fries is a character on which we think too much stress may be laid. Our plants yield more or less odor.

There are several specimens in Persoon's herbarium labelled "*Hydnum leptopus*," some of these in Persoon's handwriting. They are nearly all typical plants of this segregation. Fries regarded Persoon's species as a synonym of *H. graveolens* Delast.⁴

There appears to be no type of *H. graveolens* Delast. at Upsala. The only specimens found there referred to Delastre's species were in Starbuck's collection from Sweden and these forms approached more closely to our conception of *Phellodon amicus* (Quél.). At Kew similar forms were commonly referred to *H. graveolens* Delast. Fries's description of *H. graveolens* Delast. also points in some respects to the *amicus* type, particularly his emphasis upon the word *molli* in his description of the character of the pileus. In fact, it might reasonably be claimed that in Fries's conception *H. graveolens* Delast. includes the forms here treated as *Phellodon amicus* (Quél.), in which case the name *graveolens* should prevail for these plants as being the older name. By any other interpretation it is difficult to understand how Fries conceived any difference between *H. graveolens* Delast. and *H. melaleucum* Fr. On the other hand his figure of *H. graveolens* Delast. in his *Icones Selectae Hymenomycetes* pl. 6. f. 1 is much more nearly our conception of *P. pullus* (Schaeff.) than of *P. amicus* (Quél.). Moreover, it appears to have been Delastre's idea of the species. In Persoon's herbarium at Leyden is a speci-

³ Fries, *Syst. Myc.* 1: 406. 1821.

⁴ Fries, *Epicr. Myc.* 510; *Hym. Eur.* 616.

men received from Delastre and marked by the latter "graveolens," which is identical in character with the plants that we have regarded as typical of the present segregation. Two other specimens received from Delastre and marked "hydnum fragrans Dtr" are of precisely the same character. In Fries's herbarium at Upsala is a specimen undoubtedly received from Delastre, which is marked "hydnum fragrans. 29 Dstre. 1823. hydnum leptopus var. v. graveolens Pers. Myc. Eur. Sect. 2. p. 171." This is apparently Delastre's hand. In one corner of the label is written in a different hand "graveolens Hym. Eur. p. 606." It seems highly probable that this specimen should be regarded as the type of *H. graveolens* Delast. as published by Fries in *Epicr. loc. cit.* The specimen has the characters of the forms here considered except the upper surface of the pileus is more pubescent, in this respect approaching the character of *P. amicus* (Quél.).

The two species, *P. amicus* (Quél.) and *P. pullus* (Schaeff.), as we have defined them, are closely connected by intermediate forms, and it seems altogether probable that Fries based *H. graveolens* Delast. on some such intermediate form as the one cited above from Delastre and now at Upsala. As a consequence, there has arisen the prevailing confusion concerning the latter species. It is difficult from the evidence at hand to decide in which of the two segregations *H. graveolens* Delast. ought to be included. On the basis of Fries's figure and Delastre's specimens we consider the species as synonymous with *P. pullus* (Schaeff.). Opposed to this, however, is the fact that *H. melaleucum* Fr. is unquestionably a synonym of *P. pullus* (Schaeff.), and Fries distinctly asserts that *H. graveolens* Delast. is distinct from *H. melaleucum* Fr. The only point of difference that he mentions that seems to have any weight is the softer substance attributed to *H. graveolens*. This is the character that points toward *P. amicus* (Quél.).

PHELLODON TOMENTOSUS (L.) Banker, Mem. Torr. Club 12:
171. 1906

Hydnum tomentosum L. Sp. Pl. 2: 1178. 1753.

Hydnum cyathiforme Schaeff. Fung. Bavar. 4: 93. pl. 139. 1763.

There is no type of either the Linnaean or the Schaefferian

species in existence. Thanks to the excellent figures of Schaeffer there has never been much confusion as to the forms intended to be included in his species, and they have been more generally known by his name. The Linnaean species has been less clearly understood on account of the very brief diagnosis and the lack of any figure. Nevertheless there appears to be only the one known European species to which his description can apply.

Fries treated these forms as *H. tomentosum* L. in all of his earlier work, but in *Hymenomycetes Europaei* 606 he rejected the Linnaean name, substituting the name of Schaeffer on the ground that the Linnaean species had the pileus tomentose, while in these forms the disk was only slightly villose or altogether glabrous.⁵ While there is some truth in Fries's comment, we believe that he has given it too much weight. It is true that the dark central disk of these forms is often nearly or quite glabrous but not always. Moreover, the whitish or light colored border of the pileus is always quite densely woolly tomentose. In the herbarium at Upsala a specimen was found labelled as follows: "*Hydnum tomentosum* L. Upsala Sunnerstackog. 1851. E. P. Fries." At first we took this specimen from its dark uniform chestnut or bay color to be a *Hydnellum* rather than a *Phellodon*. It was only by a careful examination of the teeth and especially the spore characters that we became convinced that it was a *Phellodon*, and a representative of the present segregation in which the dark character of the central disk had spread quite to the margin, practically obliterating the usual whitish tomentose border. It may have been such an extreme form that induced Fries to abandon the Linnaean name.

***Phellodon carnosus* sp. nov.**

Hymenophore terrestrial, mesopodous, solitary, light colored, medium size; pileus expanded, plane to subconvex, slightly depressed, subround to irregular, 3-4 cm. wide, 1 mm. thick; surface uneven to nearly even, light grayish brown at center with subpuberulent whitish or cream colored border about 3-4 mm. wide, azonate; margin thin, sterile, incurved in drying; substance

⁵"Ad hanc speciem manifeste non pertinet *H. tomentosum* Linn., sed pileo tomentoso ad antecedentia (i. e. *H. melaleucum*). *H. cyathiforme* disco leviter modo villosum l. omnino glabrum." Fries, *Hym. Eur.* 606.

fleshy, brittle, homogeneous, slightly zonate, pale brown, darker toward base of stem; stem stout, subcylindrical, somewhat abruptly attenuate at base, glabrous or subpuberulent, light to pallid at top, becoming brownish toward base, 2-3 cm. long by 0.5-1 cm. wide, solid, consubstantiate with pileus; teeth short, stout, terete, tapering, acute, shortening toward stem and margin, almost snow white when fresh, becoming whitish to ash-gray in drying, 2 mm. or less long by 0.25-0.35 mm. wide, 5-8 in a sq. mm., somewhat decurrent as papillae; spores hyaline, subglobose, minutely echinulate, $3.5-4 \times 4-5 \mu$ wide; hyphae of trama hyaline, smooth, thin-walled, collapsing when dried, recovering in KOH, running parallel and interweaving closely, but separating with some difficulty in KOH, slender, often irregularly contorted and uneven, septate without clamp-connections, segments long, irregular, $4-10 \mu$ wide, branching diffuse, interseptate; odor faint, pleasant; taste mild.

On the ground in coniferous woods; late summer.

The type specimens are in the author's herbarium and were collected along the side of Bleecker pond near Gloversville, N. Y. Specimens of the same species have been collected in Vermont by Burlingham and are in the New York Botanical Garden Herbarium.

This is the most remarkable species in this genus. Its fleshy substance is a radical departure from the usual characters of the species included here. At first it seemed to demand the recognition of a distinct generic type, but the spore characters, the coloration, and even the peculiar odor of the plants pointed so strongly to affinity with the *Phellodons* that it seemed best to extend the boundaries of the genus so as to include this form at least for the present. Aside from its fleshy substance, it appears to be in every way a *Phellodon*.

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